Visualizing the Data

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Outline

- Goals, desired future state
- Assumptions
- Describe how we plan on implementing
- Demonstration projects
- Description

Goal (visualization project)

The single goal of this effort is to create and publish easily consumable data visualizations from the output of the Measuring Mobile Broadband America tests.

Goal (Today)

Present some data visualization ideas, and have a discussion around what we think might be possible

(un)Intended Consequences

- Loosely coupled Workflow, Data, and Visualization(s) as a package (likely on github)
- Generic tools that anyone can use; no cost barrier to consume, produce, or host (we hope)
- We begin an ecology around this data

Assumptions (this project)

- Any code or tools we develop for this visualization we will release on github.com
- This is likely to be big data (or very large)
- We are going to have a time delay to release
- Visualizations run in (modern) browsers

Assumptions (today)

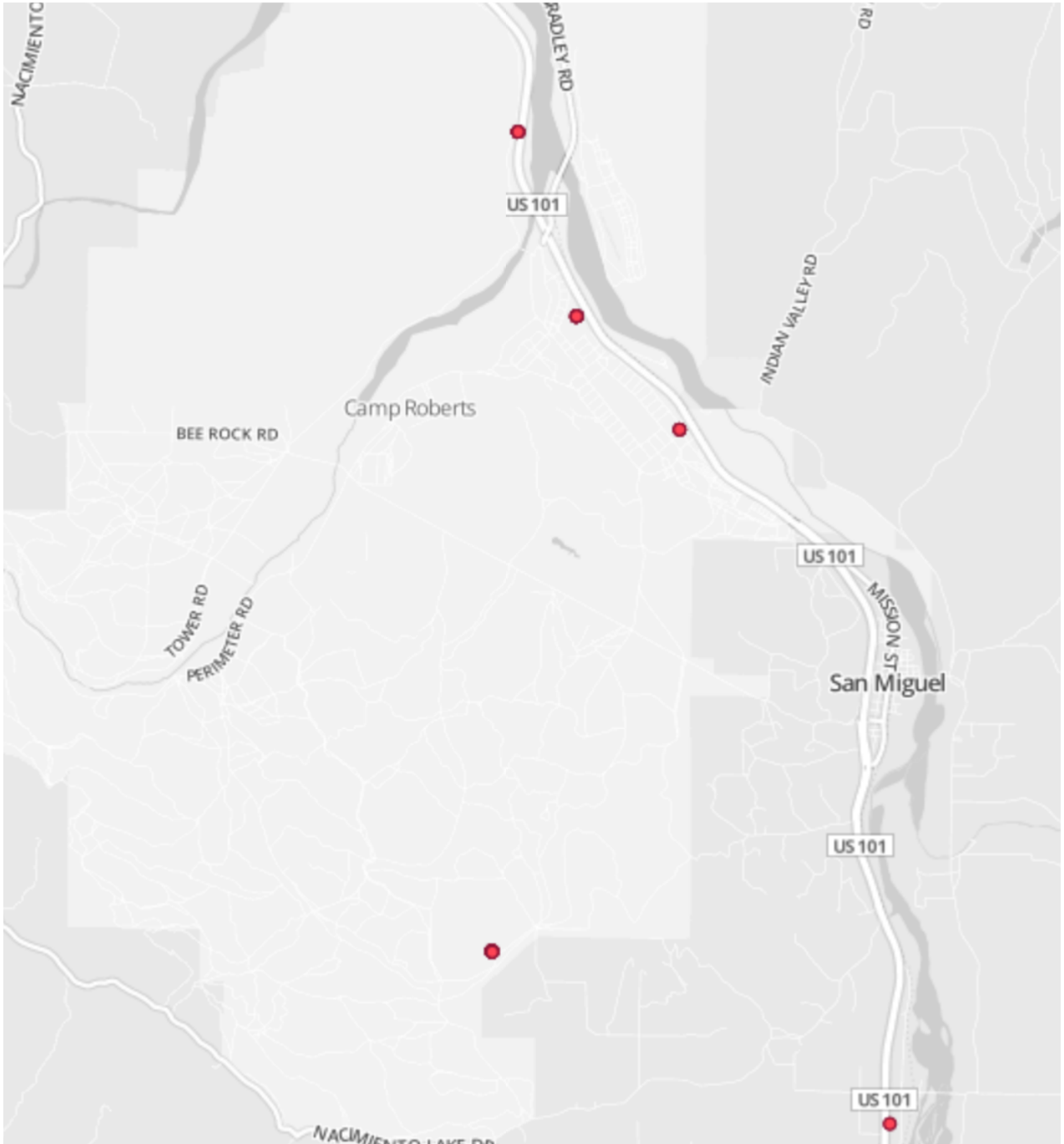
We have to know some technology/data arch.

- JSON vs. flat
- NoSQL vs SQL Databases
- 2d vs. Z value; binning/spatial aggregation
- Map Tiles vs Data Layer
- Client Side

Workflow (data processing)

- Use GPS data to bin those tests in an self forming space w/ a lat/lon and combine it w/ a Z value (signal strength)
- Use other attributes as potential filters

- Use GPS data to locate the data in an aggregate geography and bin along known geography + a Z value (speed)
- Use other attributes as potential filters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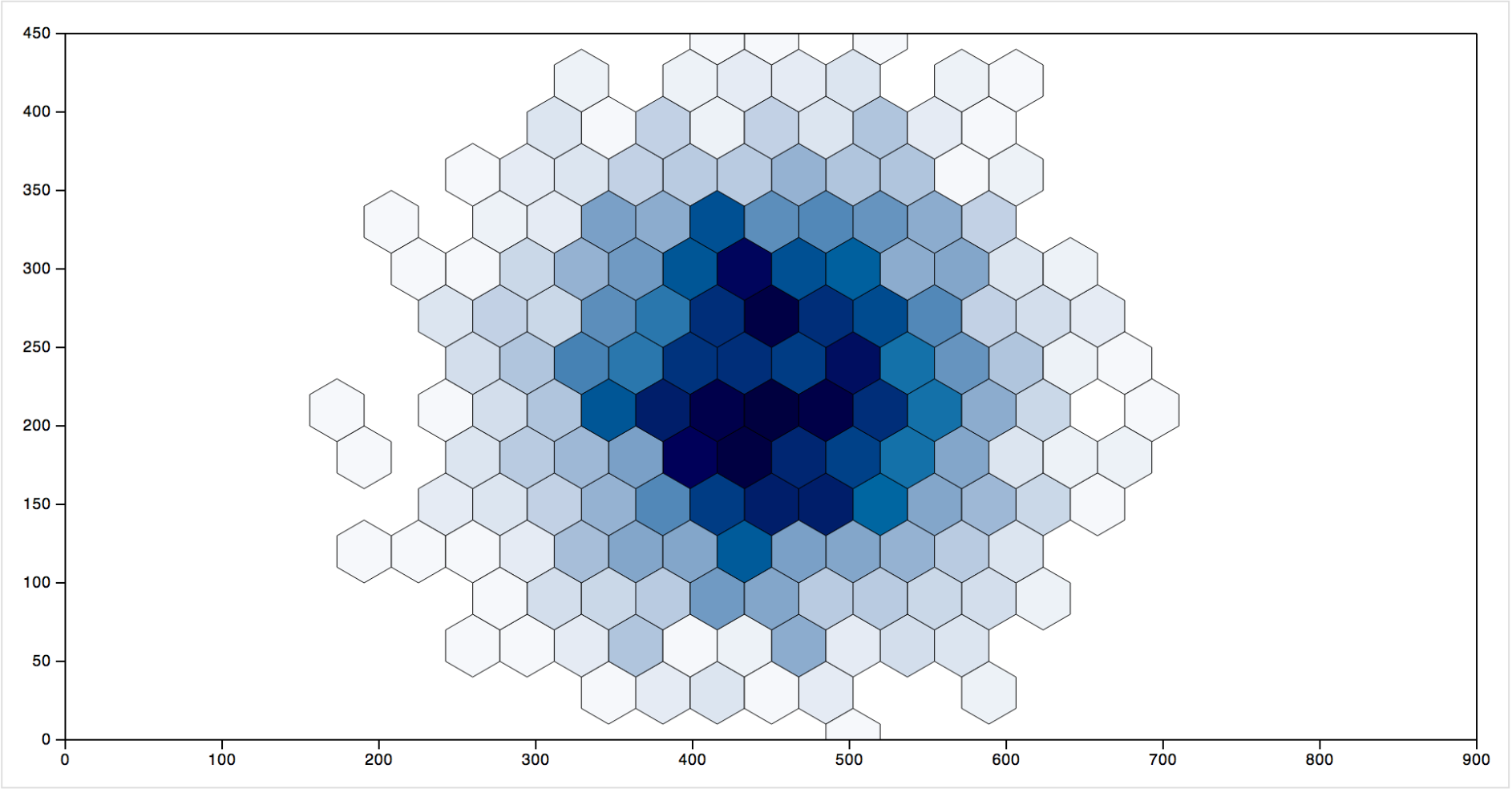
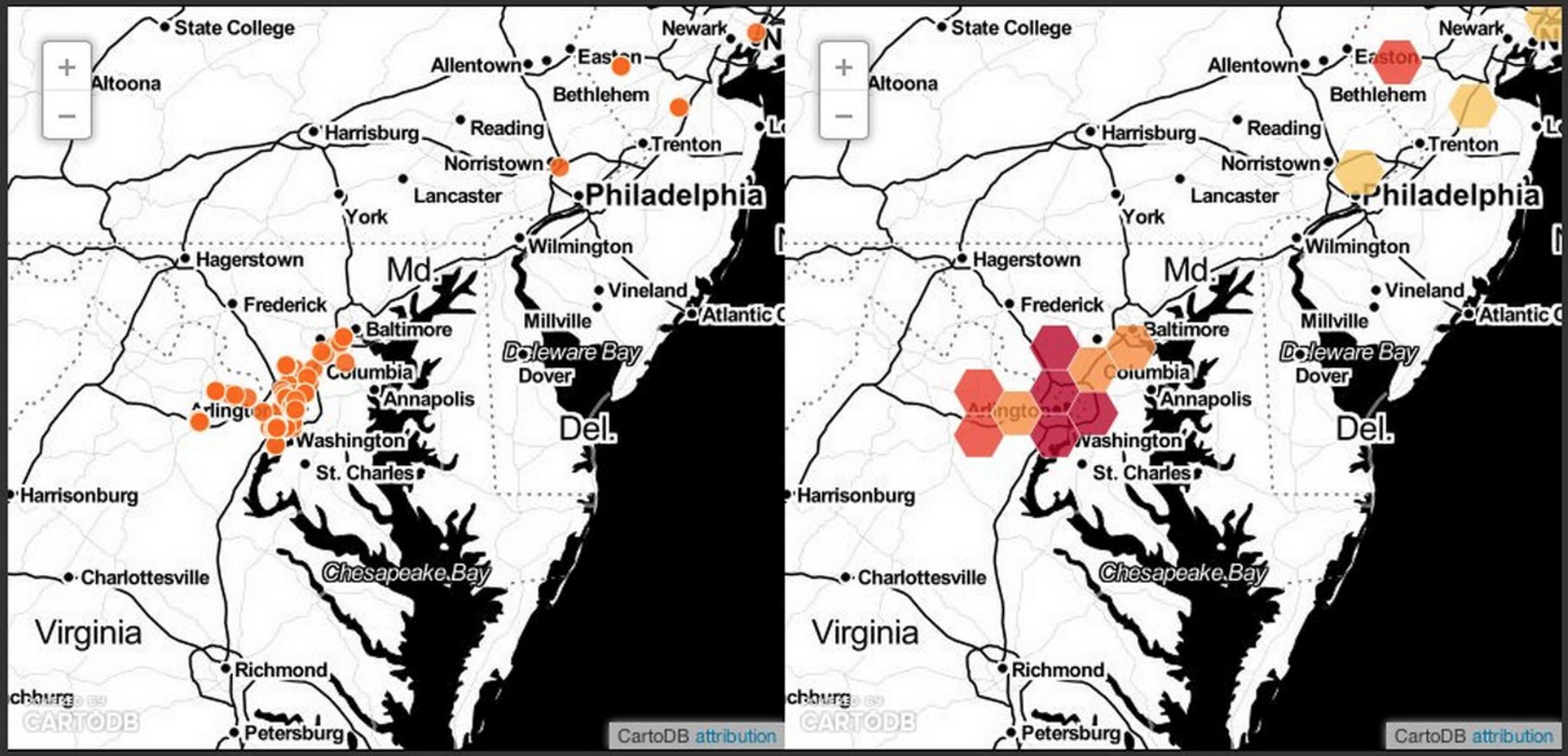
Hexagonal Binning

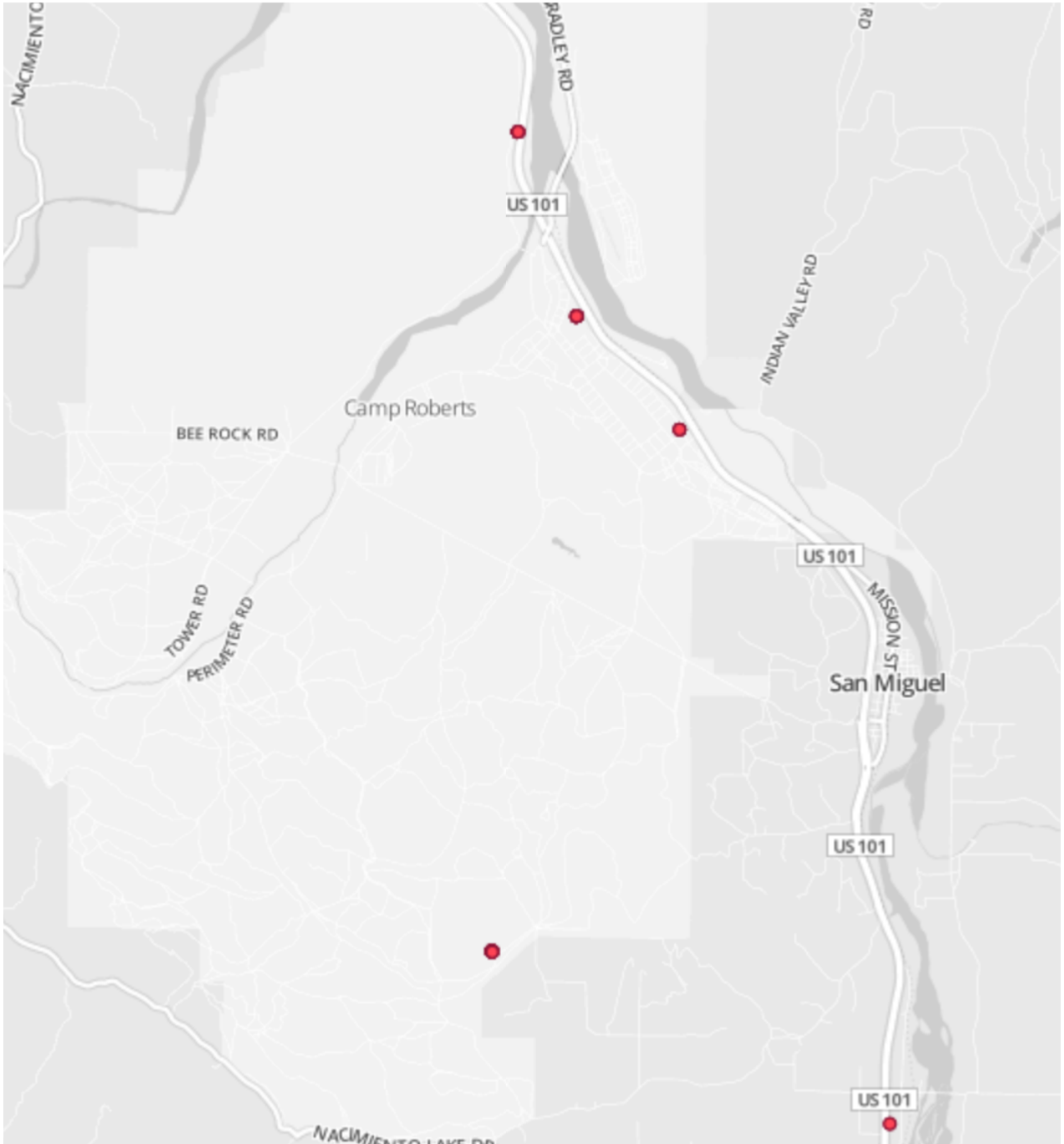
January 24, 2013



Sample Data points

The double panel map allows us to compare two cartographic techniques for displaying collected points.

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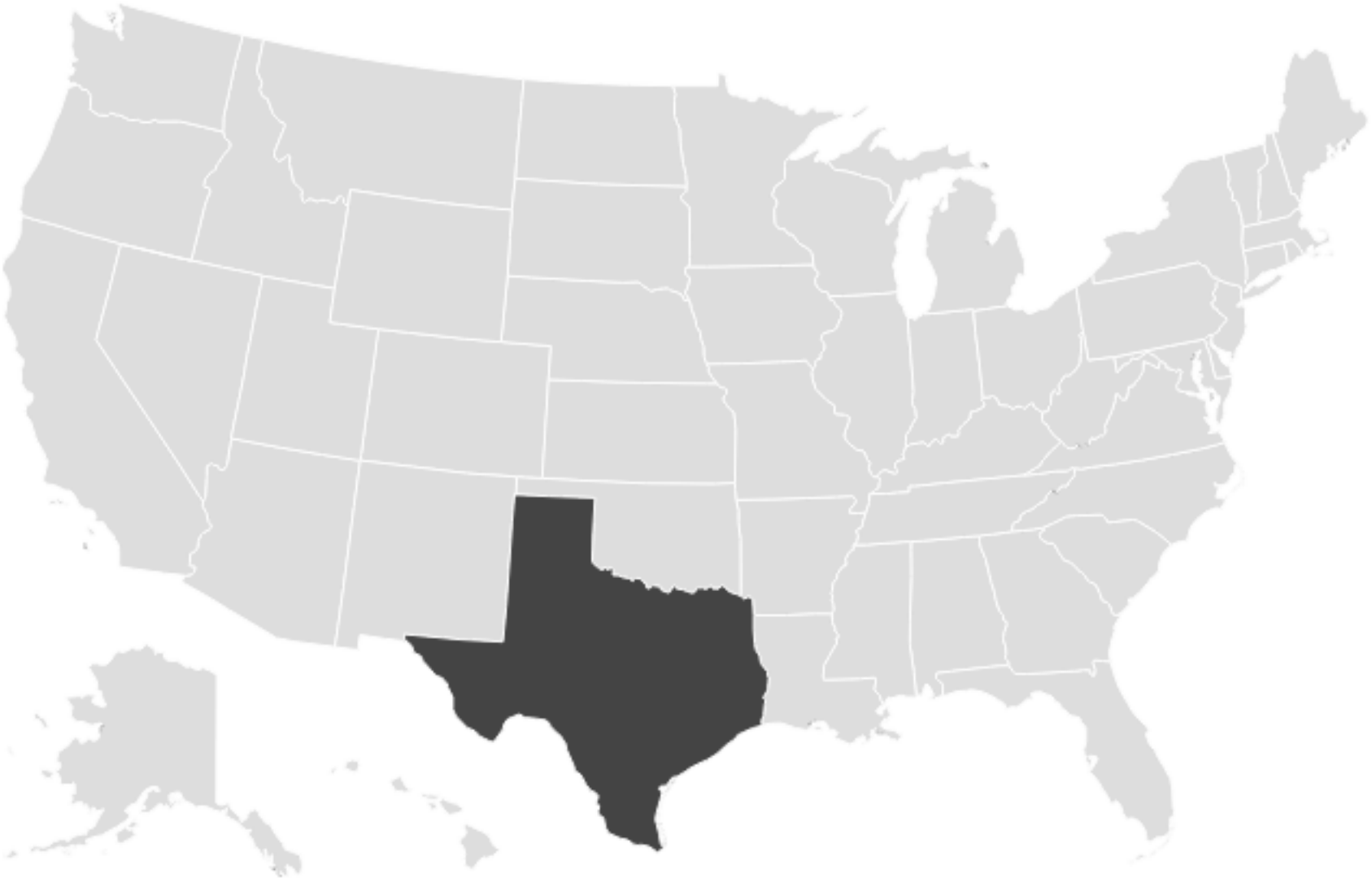

Two Visualization Concepts

- Signal Strength
- Speed

Signal Strength

Visualize signal strength from the tests

- Stronger color shows higher signal strength; weaker color shows lower signal strength. strength is along a continuum of the data presented. Data layer on top of a real world basemap.

- Assumptions: Use statistical average signal in each “bin” is valid for the selected time period.

Signal Strength

- Functional requirements (essential)
  - map is on a common base map
  - ability to pan and zoom
  - ability to filter for all, or single carrier
  - identify to see strength at an individual hexBin
- Functional requirements (better)
  - show number of measurements (by some geog.)
  - ability to swap out base map
- Functional requirements (best)
  - ability to filter by time
    - time of day
    - day of week

Examples

Point Examples

- http://cdb.io/19pfYIL
- http://cdb.io/11qYvaU

Hex Examples

- http://cdb.io/13KaRPV
- http://cdb.io/14lBEBM

Speed

- Speed abstract chart filter - an abstract interactive chart showing variation in speed (up or down) based on a number of factors
  - time of day,
  - day of week,
  - state or high level region and provider).
- speed is average speed per unit time/geography (in this case state).

Speed

- functional requirements (essential)
  - Something like 'trulia' trends chart, but w/ a filter for each download speed, upload speed, any speed, carrier, and state.

Example

- http://trends.truliablog.com/vis/tru247/

Discussion